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Toby H. Kusmer
McDERMOTT, WILL & EMERY
28 State Street
Boston, MA 02109

| EXAMINER | |
|---|---|
| ZERVIGON, RUDY | |

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| 1763 | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 10/822,358 | Applicant(s) SHAJII ET AL. | |
|---|---|---|---|
| | Examiner Rudy Zervigon | Art Unit 1763 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *08 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *All*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group I, claims 1-11 in the reply filed on November 8, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2-5, and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 2-5, and 9 are recite the limitation "delivery chamber" in . There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 102/103*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ashley; Ethan (US 5,565,038 A). Ashley teaches a system (Figure 1; column 8, lines 1-65) for delivering a desired mass of gas (1; Figure 1), comprising: a chamber (7; Figure 1; column 8, lines 17-27); a first valve (4; Figure 1; column 8, lines 1-16) controlling gas (1; Figure 1) flow into the chamber (7; Figure 1; column 8, lines 17-27); a second valve (13/14; Figure 1; column 8, lines 1-16) controlling gas (1; Figure 1) flow out of the chamber (7; Figure 1; column 8, lines 17-27); a pressure transducer ("PS8"; Figure 1; column 8, lines 17-27) providing measurements of pressure within the chamber (7; Figure 1; column 8, lines 17-27); an input device (20; Figure 1; column 8, lines 17-67 = compare to applicant's specification [0031]) for providing a desired mass of gas (1; Figure 1) to be delivered from the system (Figure 1; column 8, lines 1-65); a controller (20; Figure 1; column 8, lines 17-67) connected to the valves, the pressure transducer ("PS8"; Figure 1; column 8, lines 17-27) and the input device (20; Figure 1; column 8, lines 17-67 = compare to applicant's specification [0031]) and programmed to, receive the desired mass of gas (1; Figure 1) through the input device (20; Figure 1; column 8, lines 17-67 = compare to applicant's specification [0031]), close the second valve (13/14; Figure 1; column 8, lines 1-16); open the first valve (4; Figure 1; column 8, lines 1-16); receive chamber (7; Figure 1; column 8, lines 17-27) pressure measurements from the pressure transducer ("PS8"; Figure 1; column 8, lines 17-27); close the

inlet valve when pressure within the chamber (7; Figure 1; column 8, lines 17-27) reaches a predetermined level; wait a predetermined waiting period to allow the gas (1; Figure 1) inside the chamber (7; Figure 1; column 8, lines 17-27) to approach a state of equilibrium; open the outlet valve at time=t.sub.0; and close the outlet valve at time=t* when the mass of gas (1; Figure 1) discharged equals the desired mass – claim 1

Ashley further teaches:

i. A system (Figure 1; column 8, lines 1-65) according to claim 1, wherein the mass discharged .DELTA.m is equal to, .DELTA.m=m(t.sub.0)-m(t*)=V/R[(P(t.sub.0)/T(t.sub.0))-(P(t*)/T(- t*))] (5) wherein m(t.sub.0) is the mass of the gas (1; Figure 1) in the delivery chamber (7; Figure 1; column 8, lines 17-27) at time=t.sub.0, m(t*) is the mass of the gas (1; Figure 1) in the delivery chamber (7; Figure 1; column 8, lines 17-27) at time=t*, V is the volume of the delivery chamber (7; Figure 1; column 8, lines 17-27), R is equal to the universal gas (1; Figure 1) constant (8.3145 J/mol K), P(t.sub.0) is the pressure in the chamber (7; Figure 1; column 8, lines 17-27) at time=t.sub.0, P(t*) is the pressure in the chamber (7; Figure 1; column 8, lines 17-27) at time=t*, T(t.sub.0) is the temperature in the chamber (7; Figure 1; column 8, lines 17-27) at time=t.sub.0, T(t*) is the temperature in the chamber (7; Figure 1; column 8, lines 17-27) at time=t*, as claimed by claim 2

ii. A system (Figure 1; column 8, lines 1-65) according to claim 2, further comprising a temperature probe ("TS9"; Figure 1; column 8, lines 17-27) secured to the delivery chamber (7; Figure 1; column 8, lines 17-27) and connected to the controller (20; Figure 1; column 8, lines 17-67), wherein the temperature probe ("TS9"; Figure 1; column 8,

lines 17-27) directly provides T(t.sub.0) and T(t*) to the controller (20; Figure 1; column 8, lines 17-67), as claimed by claim 3

iii. A system (Figure 1; column 8, lines 1-65) according to claim 3, further comprising a temperature probe ("TS9"; Figure 1; column 8, lines 17-27) secured to the delivery chamber (7; Figure 1; column 8, lines 17-27) and connected to the controller (20; Figure 1; column 8, lines 17-67) and wherein T(t.sub.0) and T(t*) are calculated using: dT/dt=(.rho..sub.STP/.rho.V)Q.sub.out(.gamma.-1)T+(Nu.kappa./l)(A.sub.w/V-C.sub.v.rho.) .sub.w-T) (3) where .rho..sub.STP is the gas (1; Figure 1) density under standard temperature and pressure (STP) conditions, .rho. equals the density of the gas (1; Figure 1), V is the volume of the chamber (7; Figure 1; column 8, lines 17-27), Q.sub.out is the gas (1; Figure 1) flow out of the delivery chamber (7; Figure 1; column 8, lines 17-27), T equals absolute temperature, .gamma. is the ratio of specific heats, Nu is Nusslets number, .kappa. is the thermal conductivity of the gas (1; Figure 1), C.sub.v is the specific heat of the gas (1; Figure 1) under constant volume, l is the characteristic length of the delivery chamber (7; Figure 1; column 8, lines 17-27), and T.sub.w is the temperature of the wall of the chamber (7; Figure 1; column 8, lines 17-27) as provided by the temperature probe ("TS9"; Figure 1; column 8, lines 17-27), as claimed by claim 4

iv. A system (Figure 1; column 8, lines 1-65) according to claim 4, wherein the gas (1; Figure 1) flow out of the delivery chamber (7; Figure 1; column 8, lines 17-27) is calculated using: Q.sub.out=-(V/.rho..sub.STP)[(1/RT)(d.rho./d- t)-(P/RT.sup.2)(dT/dt)] (4), as claimed by claim 5

v. A system (Figure 1; column 8, lines 1-65) according to claim 1, wherein the predetermined level of pressure is provided through the input device (20; Figure 1; column 8, lines 17-67 = compare to applicant's specification [0031]), as claimed by claim 6

vi. A system (Figure 1; column 8, lines 1-65) according to claim 1, wherein the predetermined waiting period is provided through the input device (20; Figure 1; column 8, lines 17-67 = compare to applicant's specification [0031]), as claimed by claim 7

vii. A system (Figure 1; column 8, lines 1-65) according to claim 1, further comprising an output device (20; Figure 1; column 8, lines 17-67 = compare to applicant's specification [0031]) connected to the controller (20; Figure 1; column 8, lines 17-67) and the controller (20; Figure 1; column 8, lines 17-67) is programmed to provide the mass of gas (1; Figure 1) discharged to the output device (20; Figure 1; column 8, lines 17-67 = compare to applicant's specification [0031]), as claimed by claim 8

Ashley is not specific in teaching the operation of his valves with respect to the computer logic and processing claimed in claims 1-8.

In the event that Ashley is not deemed to anticipate Applicant's claimed invention, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the operation of the claimed apparatus.

Motivation to optimize the operation of the claimed apparatus is for optimizing the operation of Ashley's apparatus as taught by Ashley (column 8, lines 65-67). Further, it would be obvious to those of ordinary skill in the art to optimize the operation of the claimed invention (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele , 406 F.2d 1403, 160 USPQ 809

(CCPA 1969); Merck & Co. Inc . v. Biocraft Laboratories Inc. , 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied , 493 U.S. 975 (1989); In re Kulling , 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990), MPEP 2144.05).

8. Claims 1-10 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nawata, Tokuhide et al. (US 20040244837 A1). Nawata teaches a system (Figure 1) for delivering a desired mass of gas ("from process gas source"; Figure 1), comprising: a chamber (13; Figure 1); a first valve (12; Figure 1) controlling gas ("from process gas source"; Figure 1) flow into the chamber (13; Figure 1); a second valve (17; Figure 1) controlling gas ("from process gas source"; Figure 1) flow out of the chamber (13; Figure 1); a pressure transducer (14; Figure 1) providing measurements of pressure within the chamber (13; Figure 1); an input device (19; Figure 1) for providing a desired mass of gas ("from process gas source"; Figure 1) to be delivered from the system (Figure 1); a controller (19; Figure 1) connected to the valves, the pressure transducer (14; Figure 1) and the input device (19; Figure 1) and programmed to, receive the desired mass of gas ("from process gas source"; Figure 1) through the input device (19; Figure 1), close the second valve (17; Figure 1); open the first valve (12; Figure 1); receive chamber (13; Figure 1) pressure measurements from the pressure transducer (14; Figure 1); close the inlet valve when pressure within the chamber (13; Figure 1) reaches a predetermined level; wait a predetermined waiting period to allow the gas ("from process gas source"; Figure 1) inside the chamber (13; Figure 1) to approach a state of equilibrium; open the outlet valve at time=t.sub.0; and close the outlet valve at time=t* when the mass of gas ("from process gas source"; Figure 1) discharged equals the desired mass – claim 1

Nawata further teaches:

viii. A system (Figure 1) according to claim 1, wherein the mass discharged .DELTA.m is equal to, .DELTA.m=m(t.sub.0)-m(t*)=V/R[(P(t.sub.0)/T(t.sub.0))-(P(t*)/T(- t*))] (5) wherein m(t.sub.0) is the mass of the gas ("from process gas source"; Figure 1) in the delivery chamber (13; Figure 1) at time=t.sub.0, m(t*) is the mass of the gas ("from process gas source"; Figure 1) in the delivery chamber (13; Figure 1) at time=t*, V is the volume of the delivery chamber (13; Figure 1), R is equal to the universal gas ("from process gas source"; Figure 1) constant (8.3145 J/mol K), P(t.sub.0) is the pressure in the chamber (13; Figure 1) at time=t.sub.0, P(t*) is the pressure in the chamber (13; Figure 1) at time=t*, T(t.sub.0) is the temperature in the chamber (13; Figure 1) at time=t.sub.0, T(t*) is the temperature in the chamber (13; Figure 1) at time=t*, as claimed by claim 2

ix. A system (Figure 1) according to claim 2, further comprising a temperature probe (15; Figure 1) secured to the delivery chamber (13; Figure 1) and connected to the controller (19; Figure 1), wherein the temperature probe (15; Figure 1) directly provides T(t.sub.0) and T(t*) to the controller (19; Figure 1), as claimed by claim 3

x. A system (Figure 1) according to claim 3, further comprising a temperature probe (15; Figure 1) secured to the delivery chamber (13; Figure 1) and connected to the controller (19; Figure 1) and wherein T(t.sub.0) and T(t*) are calculated using: dT/dt=(.rho..sub.STP/.rho.V)Q.sub.out(.gamma.-1)T+(Nu.kappa./l)(A.sub.w/V-sub.v.rho.) .sub.w-T) (3) where .rho..sub.STP is the gas ("from process gas source"; Figure 1) density under standard temperature and pressure (STP) conditions, .rho. equals the density of the gas ("from process gas source"; Figure 1), V is the volume of the chamber (13; Figure 1), Q.sub.out is the gas ("from process gas source"; Figure 1) flow

out of the delivery chamber (13; Figure 1), T equals absolute temperature, .gamma. is the ratio of specific heats, Nu is Nusslets number, .kappa. is the thermal conductivity of the gas ("from process gas source"; Figure 1), C.sub.v is the specific heat of the gas ("from process gas source"; Figure 1) under constant volume, l is the characteristic length of the delivery chamber (13; Figure 1), and T.sub.w is the temperature of the wall of the chamber (13; Figure 1) as provided by the temperature probe (15; Figure 1), as claimed by claim 4

xi. A system (Figure 1) according to claim 4, wherein the gas ("from process gas source"; Figure 1) flow out of the delivery chamber (13; Figure 1) is calculated using: Q.sub.out=-(V/.rho..sub.STP)[(1/RT)(d.rho./d- t)-(P/RT.sup.2)(dT/dt)] (4), as claimed by claim 5

xii. A system (Figure 1) according to claim 1, wherein the predetermined level of pressure is provided through the input device (19; Figure 1), as claimed by claim 6

xiii. A system (Figure 1) according to claim 1, wherein the predetermined waiting period is provided through the input device (19; Figure 1), as claimed by claim 7

xiv. A system (Figure 1) according to claim 1, further comprising an output device (19; Figure 1) connected to the controller (19; Figure 1) and the controller (19; Figure 1) is programmed to provide the mass of gas ("from process gas source"; Figure 1) discharged to the output device (19; Figure 1), as claimed by claim 8

xv. a system (Figure 1) according to claim 1, further comprising a process chamber ("tovacuum vessel"; Figure 1) connected to the delivery chamber (13; Figure 1) through the second valve (17; Figure 1), as claimed by claim 9

xvi. A system (Figure 1) according to claim 1, wherein the pressure transducer (14; Figure 1) has a response time of about 1 to 5 milliseconds ([0114]), as claimed by claim 10

Nawata is not specific in teaching the operation of his valves with respect to the computer logic and processing claimed in claims 1-8.

In the event that Nawata is not deemed to anticipate Applicant's claimed invention, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the operation of the claimed apparatus.

Motivation to optimize the operation of the claimed apparatus is for optimizing the operation of Nawata's apparatus as taught by Nawata (). Further, it would be obvious to those of ordinary skill in the art to optimize the operation of the claimed invention (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele , 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); Merck & Co. Inc . v. Biocraft Laboratories Inc. , 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied , 493 U.S. 975 (1989); In re Kulling , 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990), MPEP 2144.05).

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nawata, Tokuhide et al. (US 20040244837 A1) in view of Ohmi; Tadahiro et al. (US 6193212 B1). Nawata is discussed above. Nawata does not teach that his second valve (17; Figure 1) has a response time of about 1 to 5 milliseconds. Ohmi teaches a fluid delivery valve (Figure 1) with a response time of "a few milliseonds" (column 3; lines 24-33; Table 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Nawata's second valve (17; Figure 1) with Ohmi's fluid delivery valve.

Motivation to replace Nawata's second valve (17; Figure 1) with Ohmi's fluid delivery valve is for preventing counter flow as taught by Nawata (column 2; lines 48-61).

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. WO 3034169 A1.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

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